DESIGN HINGED FOLDING BOX
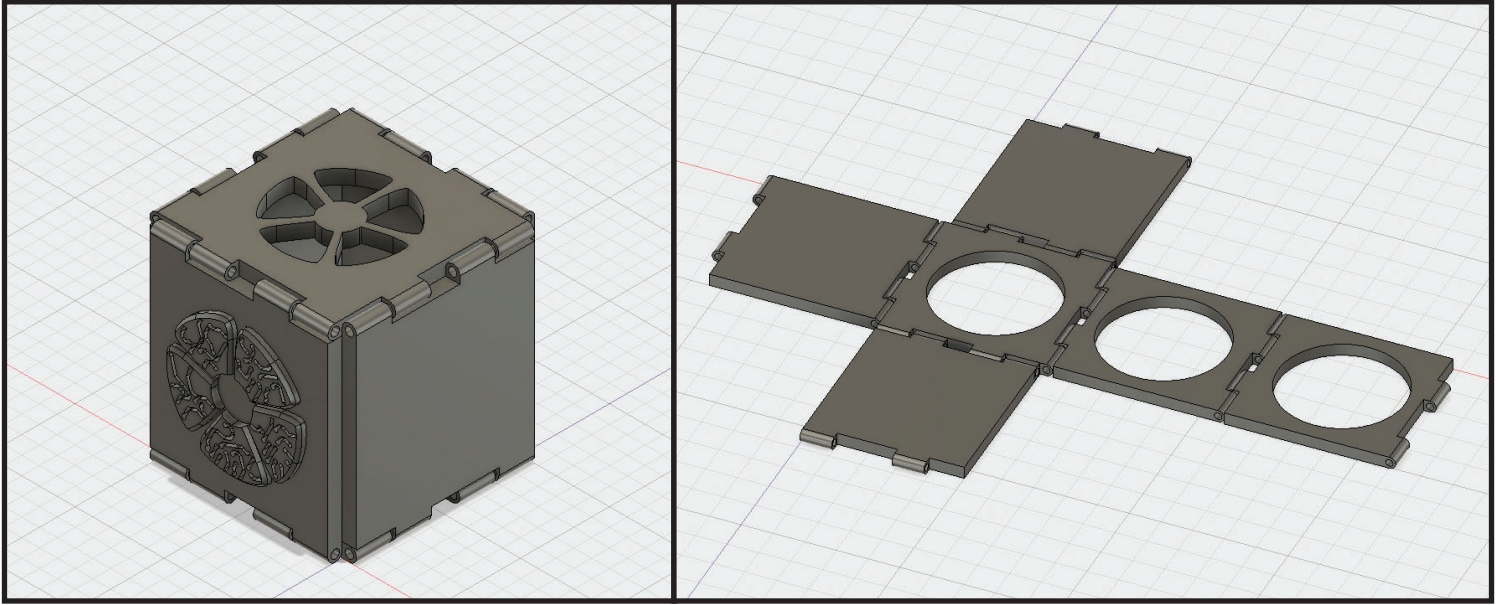
(Autodesk Fusion 360 Tutorial - Intermediate Level - Written by Maz a.k.a. Rose M.)

1. Create the first panel. In the toolbar at the top, go to Create > "Box". Click to select the bottom plane(X Z plane) to place the box on and then click again to set the starting point of the box. Set the values to "50mm" x "50mm" x "4mm". Press "Enter/Return" to accept or click "Okay". In the tree/browser on the left, rename this body to "bottom panel".
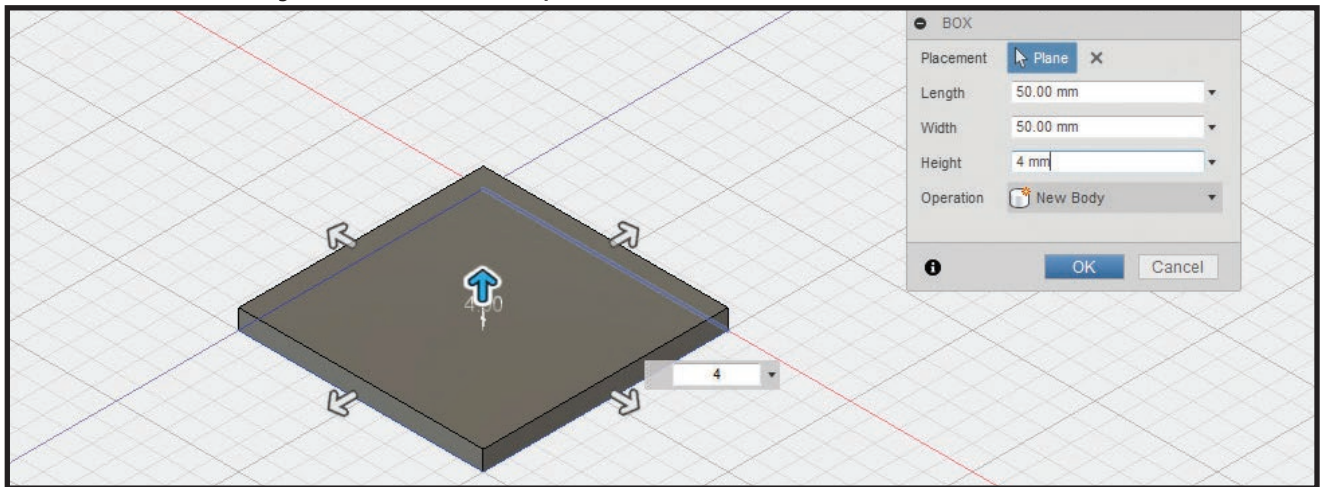

2. Create the sketch and geometry for the hinge. In the toolbar at the top, go to Sketch > Circle > "2-Point Circle". Click the "Right" view plane or side plane to set the sketch plane. Hover over the short edge on the bottom panel to snap to the center point of the line, click and pull straight out and set diameter value to "4mm".

Press "Enter/Return" to lock the value, and hit "Enter/Return" once more to place the circle sketch.
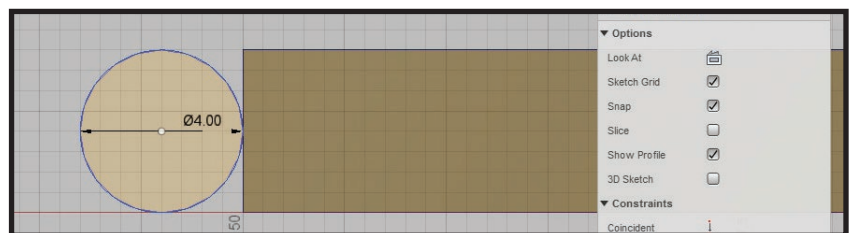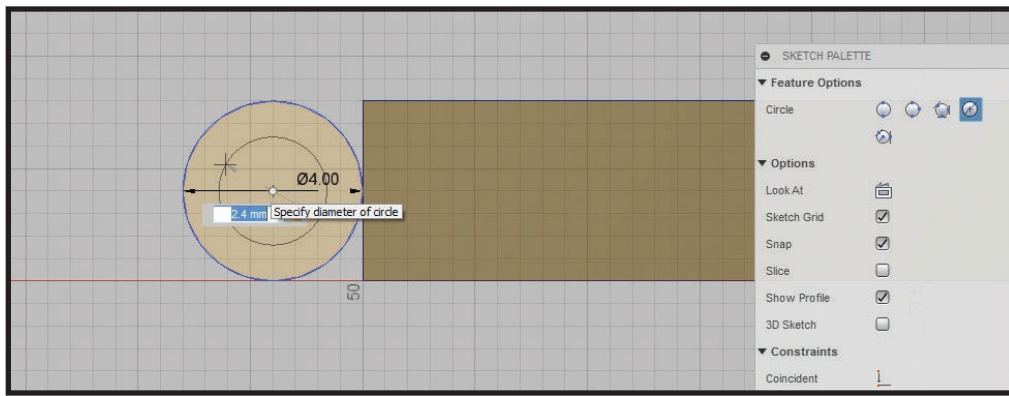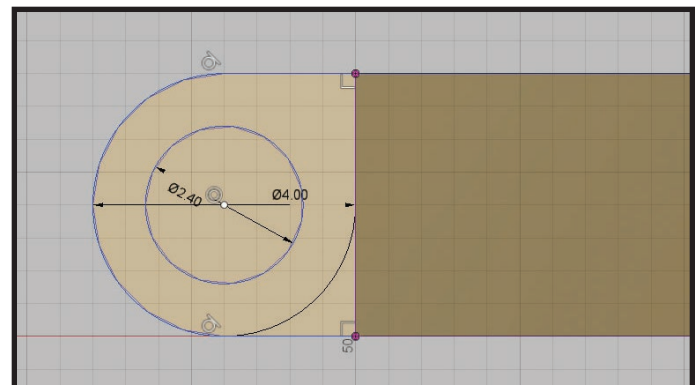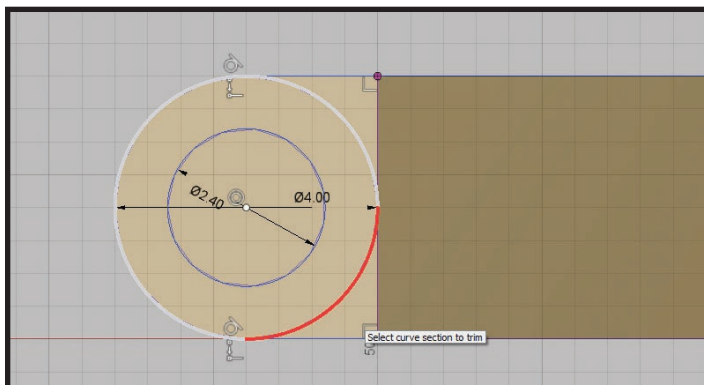
In the toolbar at the top, go to Sketch > Circle > "Center Diameter Circle". Click the center point inside the 4mm circle sketch, and pull out or set the diameter value to "2.4mm", press "Enter/Return" to lock the value, and press "Enter/Return" once more to place the circle sketch.
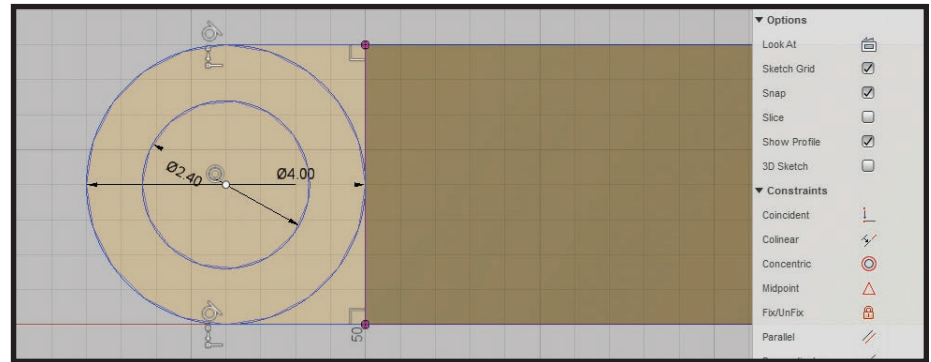

In the toolbar at the top, select Sketch > Line, on the 4mm circle sketch click+hold+drag to sketch line from the circle sketch to the corner point on the bottom panel. Do the same for the opposite side of the circle sketch.

In the toolbar at the top, select Sketch > "Trim", hover the mouse over the edge on the 4mm circle sketch, it will turn red, hover over the portion of the 4mm circle that is on the right side between the line on the bottom panel, click to trim that portion of the 4mm circle. Do the same for the opposite portion of the 4mm circle. Press "Enter/Return" to exit the trim sketch tool.

Click inside the sketch, right click/CMD+ click to open the pop-up wheel menu, and select the blue version of extrude. Orbit to the "Top+Front+Right" view, set the extrude value to "-10mm", change the operation to "New Body", hit "Enter/Return" to accept or click "Okay". In the tree/browser on the left side of the screen, expand the bodies tree, double click "Body 2", rename it "hinge body", and hit "Enter/Return" to accept changes.
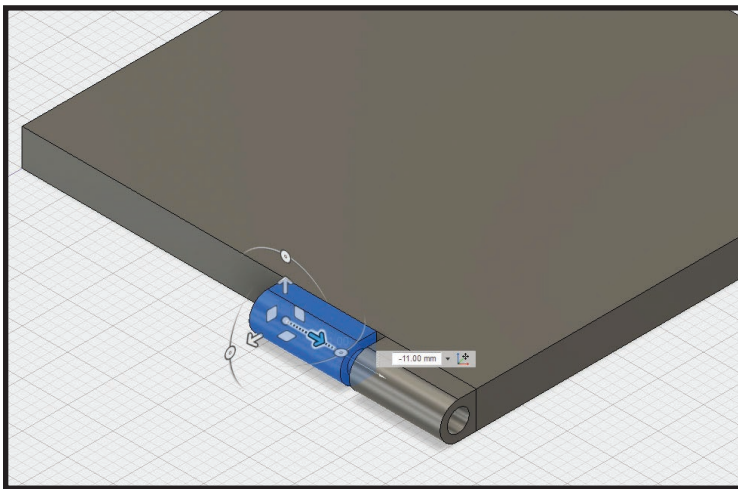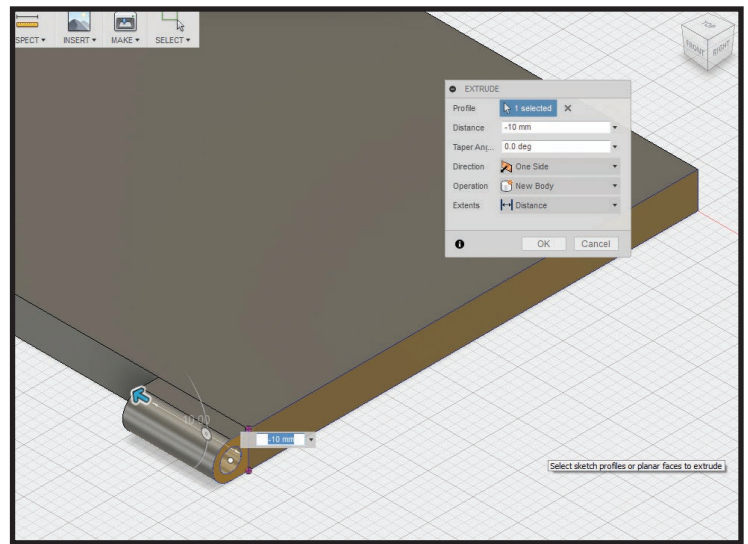
3. Make copies of the hinge body. In the tree/browser on the left, go the the Bodies section, click to select the "hinge body", press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, move the copied hinge body "-11mm" on the X axis. Move on the X axis one of two ways, drag the X axis arrow on the gizmo "-11mm" or change the "X Distance" in the dialog box on the right to "-11mm". Press "Enter/Return" to accept or click "Okay".

In the tree/browser on the left, go the the Bodies section, click to select both the "hinge body" and the new copy of the hinge body, press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, move the copied hinge body "-29mm" on the X axis.
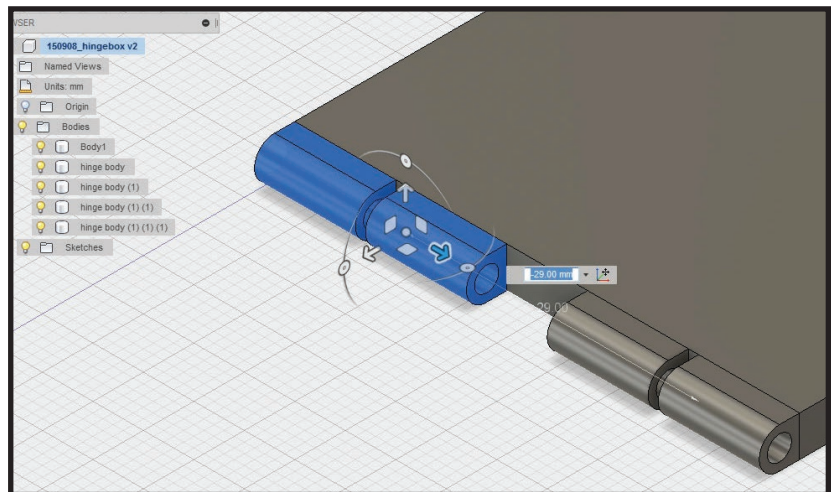
Move on the X axis one of two ways, drag the X axis arrow on the gizmo "-29mm" or change the "X Distance" in the dialog box on the right to "-29mm". Press "Enter/Return" to accept or click "Okay".

In the tree/browser on the left, go the the Bodies section, click to select all four hinge bodies, press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, in the dialog box on the right, click to select the "Set Pivot" icon near Set Pivot, hover over the right side face of the box, and find the center point of the face.
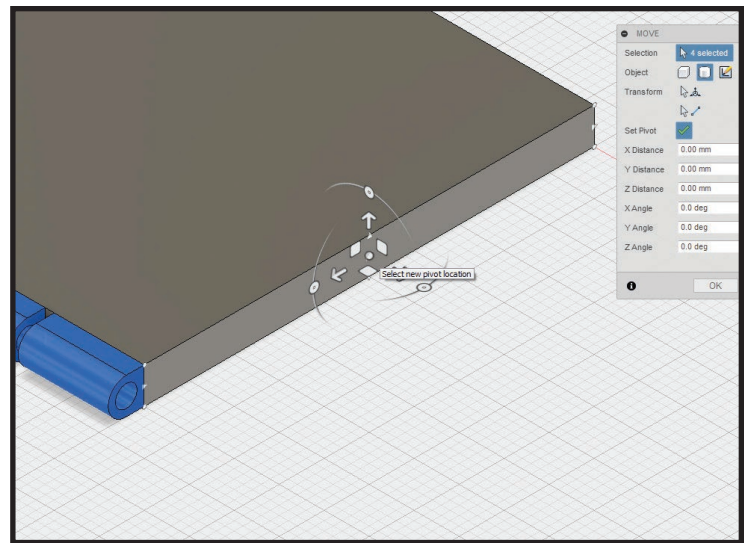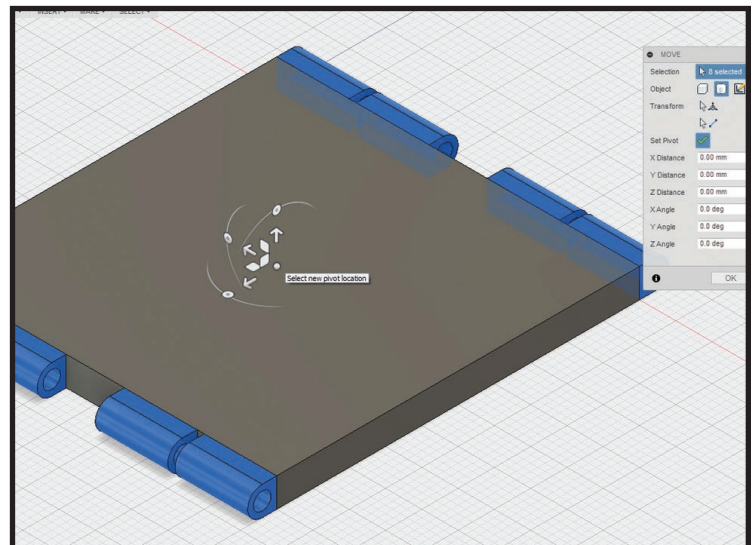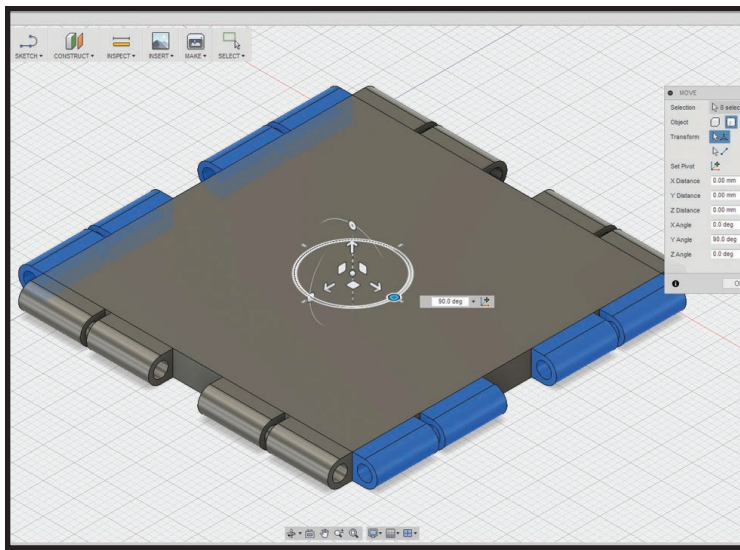
Once the cursor snaps to the center point of the right side face of the box, click to select the pivot point, and in the dialog box on the right click the green check mark near "Set Pivot" to accept the new pivot.
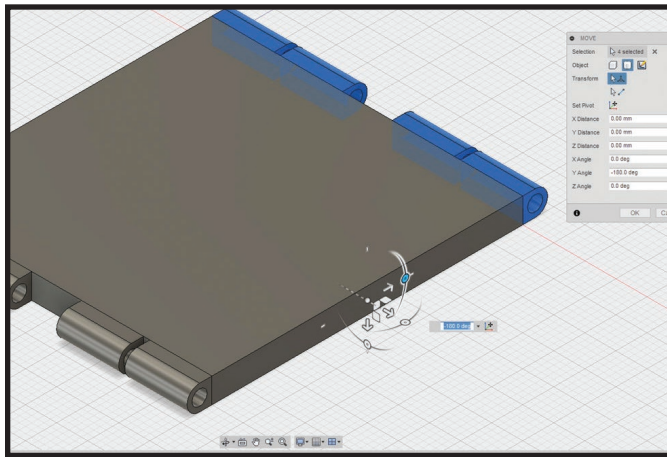
Rotate the four hinge body copies to the opposite side of the box. To rotate the hinge body copies to the opposite side, click on the "Y axis" rotation arc part of the gizmo and drag to "180" or set the Y angle in the dialog box on the right to "180". Press "Enter/Return" to accept or click "Okay".

In the tree/browser on the left, go the the Bodies section, click to select all of the hinge bodies, press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, in the dialog box on the right, click to select the "Set Pivot" icon near Set Pivot, hover over the top face of the bottom panel, and find the center point of the face.
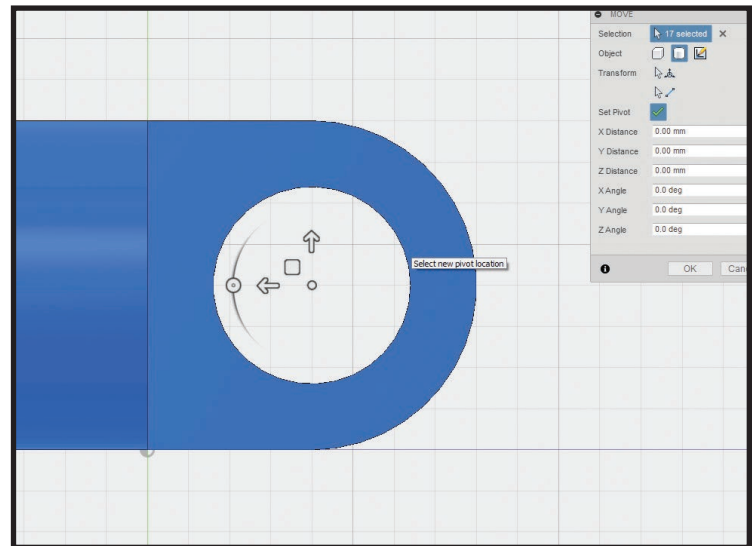
Once the cursor snaps to the center point of the top face on the bottom panel, click to select the pivot point, and in the dialog box on the right click the green check mark near "Set Pivot" to accept the new pivot. Rotate all the hinge bodies 90°. To rotate the hinge bodies 90°, click on the "Y axis" rotation arc and drag to "90" or set the Y angle in the dialog box on the right to "90".

Press "Enter/Return" to accept or click "Okay".

4. Make copies of the hinge panel. In the tree/browser on the left, go the the Bodies section, click+hold shift to select all of the hinge bodies + panel body, press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, in the dialog box on the right, click to select the "Set Pivot" icon near Set Pivot,


in the right side view, hover over the center of the circle on the hinge on the right, and find the center point of the circle. Once the cursor snaps to the center point of the circle, click to select the pivot point, and in the dialog box on the right click the green check
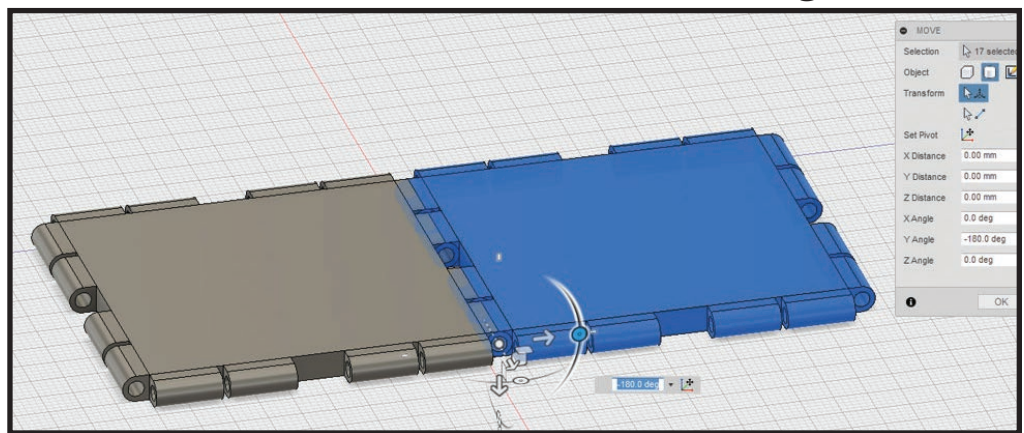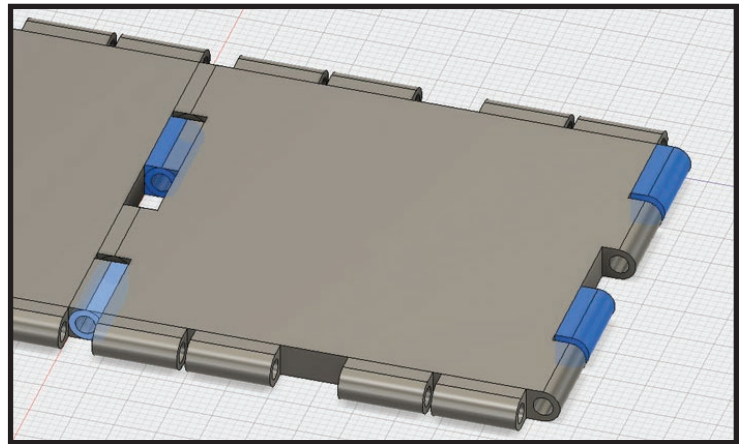

mark near "Set Pivot" to accept the new pivot. Rotate all the bodies -180°. To rotate all the bodies -180°, click on the "X axis" rotation arc and drag to "-180" or set the X angle in the dialog box on the right to "-180". Press "Enter/Return" to accept or click "Okay".

5. Combine select hinge bodies to the panel body. First, set the view to the "Top+Right+Back" view. In the toolbar at the top, go to Modify > "Combine", select the second panel, then starting from the left side and going to the right side, select hinge "1" and "3", then select hinge "2" and "4" on the opposite side, change the operation in the dialog box on the right to "Join", and press "Enter/Return" to accept or click "Okay". In the tree/browser on the left, rename
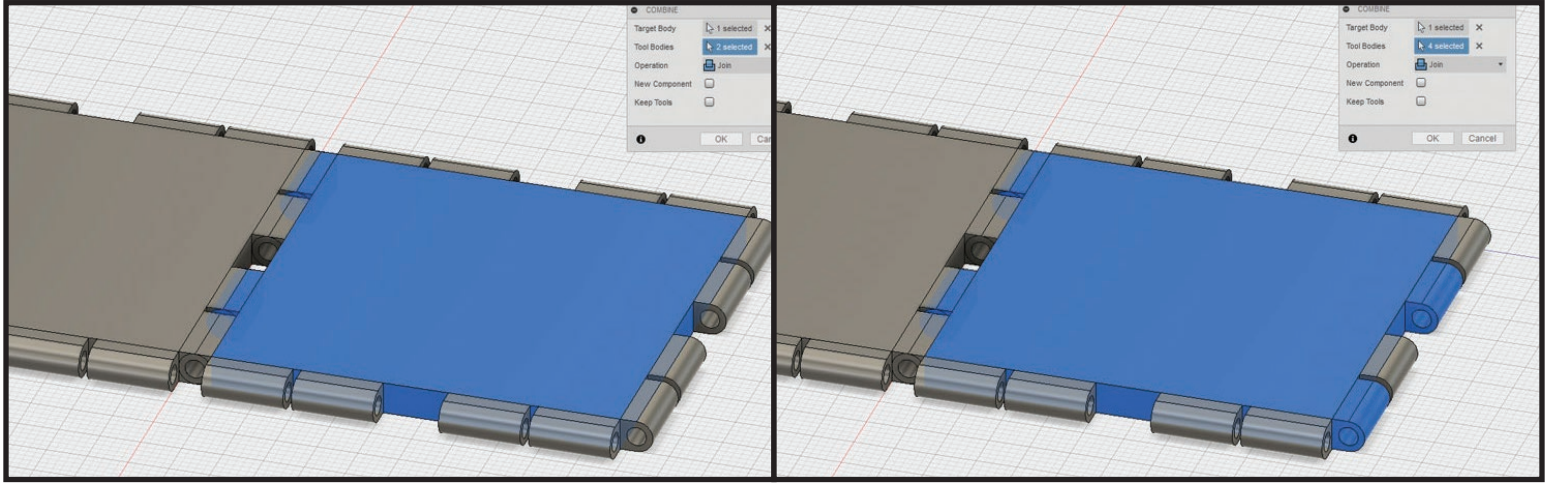
Clean up by hiding hinges "2" and "4" and "1" and "3" that were not combined to side panel body. Select the bodies and in the tree/browser on the left, click the light bulb to hide.


6. Make copies of the side panel. In the tree/browser on the left, go the the Bodies section, click to select the side panel, press "CTRL+C/CMD+C" to copy,
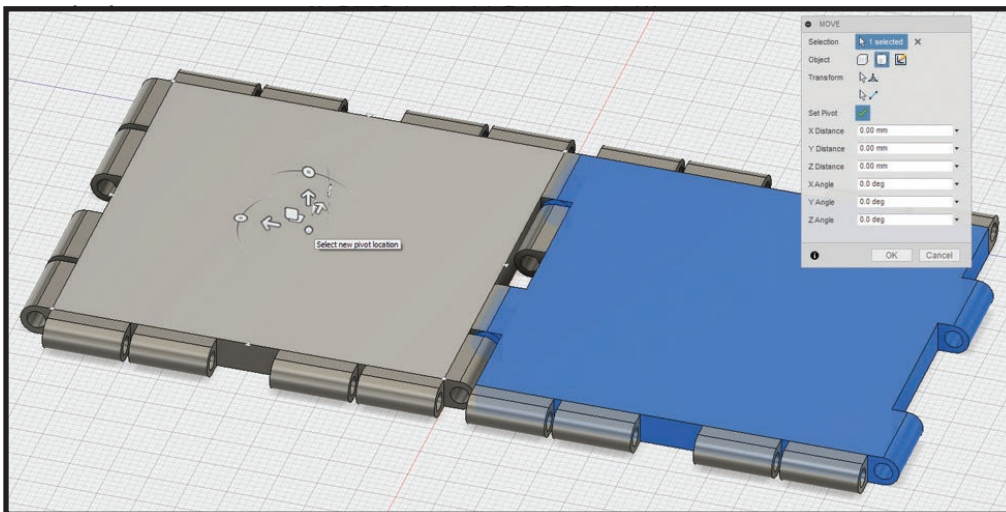
While still in the move tool from pasting the new body, in the dialog box on the right, click to select the "Set Pivot" icon near Set Pivot, hover over the top face of the box, and find the center point of
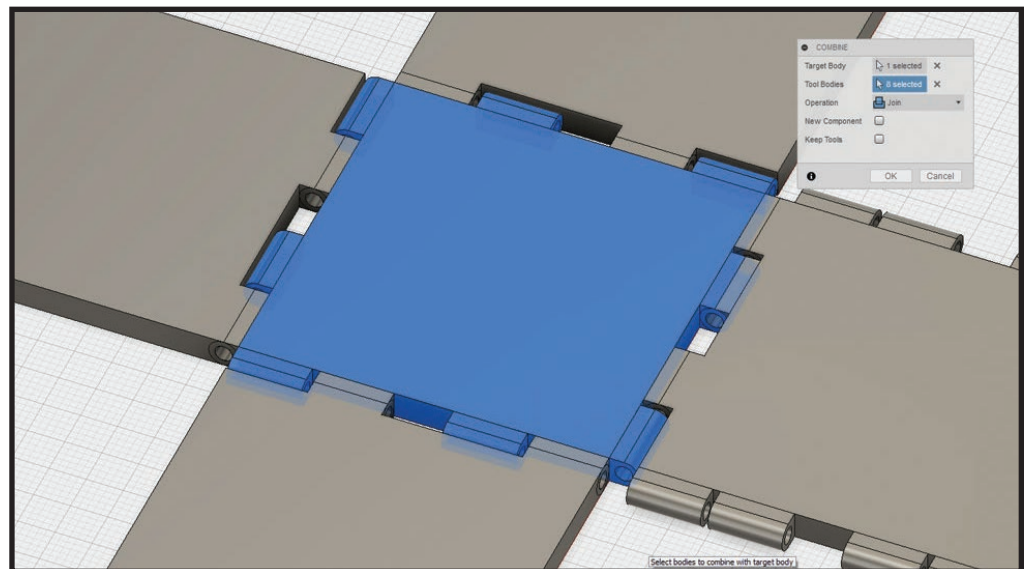
Once the cursor snaps to the center point of the top face of the box, click to select the pivot point, and in the dialog box on the right click the green check mark near "Set Pivot" to accept the new pivot. Rotate the hinge panel 90°. To rotate the hinge panel 90°, click on the "Y axis" rotation arc and drag to "90" or set the Y angle in the dialog box on the right
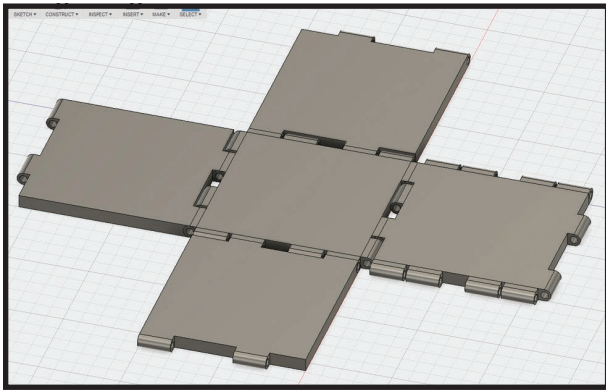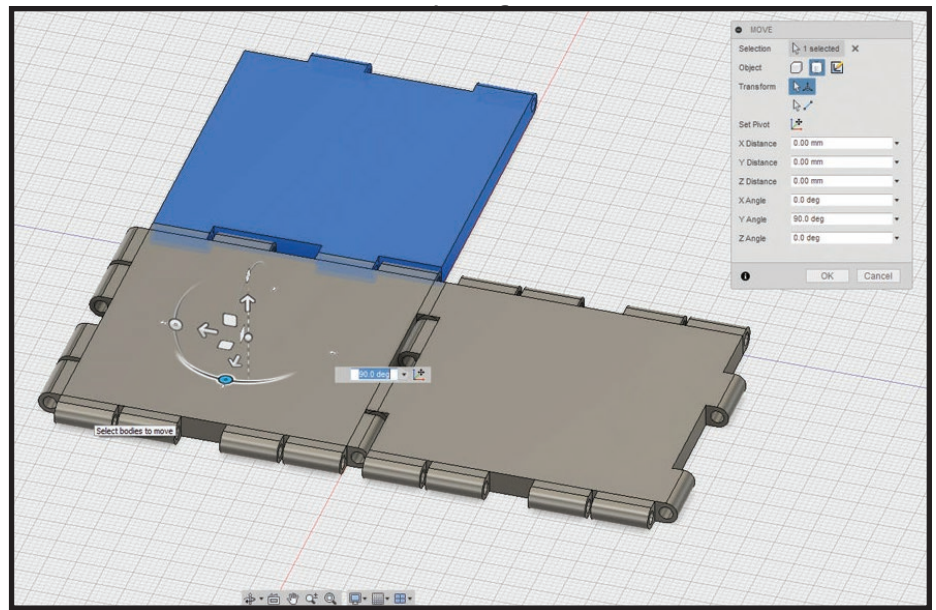

Press "Enter/Return" to accept or click "Okay".

Repeat this step for the other two side panels, to end with 5 total hinged panels on screen.

7. Combine the hinge bodies next to the bottom panel to the bottom panel. In the toolbar at the top, go to Modify > "Combine", click to select the "bottom panel", and then select the leftover loose hinge bodies that have their flat face against the bottom panel. In the dialog box on the right, set the operation to "Join", and press "Enter/Return" to accept or click "Okay".

8. Create the top panel of the folding hinge box. Select the bottom panel in the tree/browser on the left, press "CTRL+C/CMD+C" to copy, and then press "CTRL+V/CMD+V" to paste. While still in the move tool from pasting the new body, in the dialog box on the right, click to select the "Set Pivot" icon near Set Pivot, hover over the top face on the bottom panel, and find the center point of the bottom panel. Once the cursor snaps to the center point of the top face on the bottom panel, click to select the pivot point, and in the dialog box on the right click the green check mark near "Set Pivot" to accept the new pivot. Move the copied bottom panel on the Y axis "54mm". Press "Enter/Return" to accept or click "Okay". Rename this new panel body to "Top Panel".
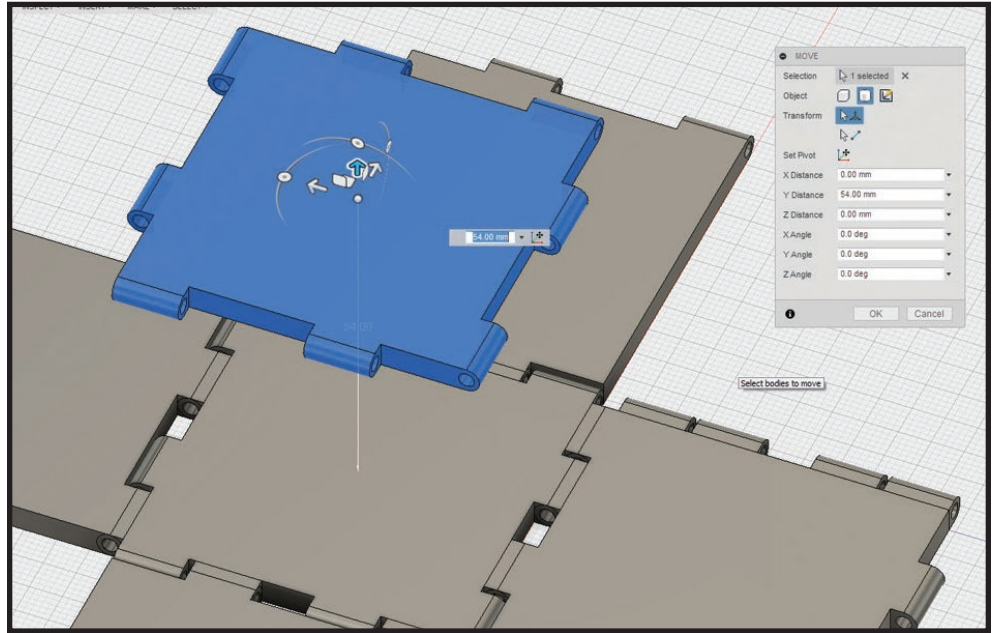
The folding hinge box is now finished as far as function. Now it's time to add design to each panel. Import SVGs of vector art and extrude, draw sketches and add or subtract from panels, create text and add or subtract from panels, use your imagination!

You can even turn this into a pencil/pen/stylus holder just by cutting holes into the top panel.

Note: Use pieces of 1.75mm filament inside hinge holes for assembly.